

REMARKS

Claims 1-20, 22-38, 40-57, 59 and 60 are pending in this application. By this Amendment, claims 30, 52, 53 and 54 are amended and claims 21, 39, 58 and 61 are cancelled. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Rejection Under 35 U.S.C. §102(b)

The Office Action rejects claims 30-34 under 35 U.S.C. §102(b) over U.S. Patent 5,384,221 to Savant et al. ("Savant"). Applicants respectfully traverse the rejection.

Savant does not disclose each and every element of claim 30. Claim 30 recites "[a]n optical recording apparatus comprising: a light source that generates recording light; a spatial optical modulator that controllably rotates a polarization angle of said recording light; and a focusing optical system that performs multilevel modulation of an azimuth of a half-wave plate or a quarter-wave plate within an optical recording layer of an optical recording medium by directing the recording light obtained through the spatial optical modulator to the optical recording medium" (emphasis added). Savant does not anticipate such an apparatus.

The Office Action asserts that Savant teaches an optical recording apparatus having all of the elements of claim 30. In particular, the Office Action asserts that Savant discloses a focusing optical system that multilevel modulates an azimuth of an optical recording layer. Notwithstanding this assertion, nowhere does Savant disclose an optical recording apparatus including a focusing optical system that performs multilevel modulation of an azimuth of a half-wave plate or a quarter-wave plate within an optical recording layer.

Savant is directed to optical storage media including a transparent polymer and an isomerizable AZO dye. *See* Abstract. In Savant, the AZO dye polymers are used to store information through birefringence. C7/L34-36. Savant further teaches that the polarization of a recording light can be rotated to one of 32 positions to store 5 bits of information at a

particular location. C25/L1-2. However, nowhere does Savant teach or suggest that a focusing optical system could or should perform multilevel modulation of an azimuth of a half-wave plate or a quarter-wave plate within an optical recording layer. As Savant does not teach or suggest an apparatus including a focusing optical system that performs multilevel modulation of an azimuth of a half-wave plate or a quarter-wave plate within an optical recording layer, Savant does not disclose each and every element of claim 30.

Claim 30 is not anticipated by Savant. Claims 31-34 depend from claim 30, and thus, also are not anticipated by Savant. Accordingly, reconsideration and withdrawal of the rejection of claims 30-34 are respectfully requested.

Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 1-29 and 35-61 under 35 U.S.C. §103(a) over U.S. Patent 5,251,197 to Leube et al. ("Leube") in view of Savant and U.S. Patent No. 4,551,819 to Michl et al. Claims 21, 39, 58 and 61 are cancelled, thus rendering the rejection moot as to those claims. As to the remaining claims, Applicants respectfully traverse the rejection.

Leube does not teach or suggest each and every feature of rejected claims. Savant and Michl do not cure the deficiencies of Leube. Each of claims 1-20, 22-29, 35-38, 40-54, 56, 57, 59 and 60 recites, in one form or another, that the azimuth of a half-wave plate or a quarter-wave plate within a recording medium is multilevel modulated. For example, claim 1 recites "[a]n optical recording medium ... wherein an azimuth of the half-wave plate within the optical recording medium is multilevel-modulated so that information is recorded on the optical recording medium by the recording light." Similarity, claim 22 recites "[a]n optical recording method ... the optical recording medium ... that acts substantially as a half-wave plate ... wherein the azimuth corresponding to a polarization angle on the optical recording medium is multilevel-modulated so that information is recorded on the optical recording medium by the recording light." Claim 55 recites "[a]n optical recording medium ... the

optical element having an azimuth of birefringence and acting on reproducing light to adjust a polarization angle of the reproducing light by an amount greater than a difference between a polarization angle of the recording light used to form the optical element and a polarization angle of the reproducing light before the reproducing light is acted on by the optical element." The combination of Leube, Savant and Michl does not render obvious such media, methods or apparatuses.

The Office Action concedes that Leube does not teach or suggest media, methods or apparatuses in which the azimuth of a half- or quarter-wave plate within a recording medium is multilevel-modulated. The Office Action argues, however, that Savant and Michl remedy the deficiencies of Leube by teaching multi-level modulation by rotating the polarization angle of a recording light (Savant) and multi-level modulation of a half- or quarter-wave plate within an optical recording medium (Michl). Notwithstanding these assertions, the combination of Leube, Savant and Michl does not teach or suggest multi-level modulating the azimuth of a half- or quarter-wave plate within an optical recording medium.

One of ordinary skill in the art would not have been motivated to combine the teachings of Leube, Savant and Michl to obtain the claimed invention. It is undisputed that Leube does not teach varying the polarization angle of a recording light to achieve multi-level modulation of a half- or quarter-wave plate within an optical recording medium. Savant teaches varying the polarization angle of a recording light to achieve multi-level modulation of an optical recording medium, but does not teach multi-level modulation of a half- or quarter-wave plate within an optical recording medium. Michl teaches multi-level modulation of a half- or quarter-wave plate, but does not teach varying the polarization angle of a recording light to achieve multi-level modulation. Thus, in order for the combination to render obvious the claimed invention, there must be some motivation to bring these teachings of Savant and Michl together. Applicants submit that there is not.

In Savant, multi-level modulation is achieved by polarizing an incident recording light. In particular, Savant teaches that the polarization angle of the recording light can be rotated to one of 32 positions, to store 5 bits of information. C25/L1-2. The detection of such information occurs by detecting the polarization angle of a transmitted reading light. C25/L17-23. In Michl, half- and quarter-wave plates are used to improve the contrast between areas in a medium where birefringence has been removed and areas where birefringence has not been removed, when reading the medium. C14/L37-48. None of the references remotely teach or suggest that employing a half- or quarter-wave plate would result in any improvement in reading a medium in which the azimuth has been multi-level modulated by controlling the polarization angle of a recording light.

The present inventors discovered that by multi-level modulating the polarization angle of a recording light when recording on a half- or quarter-wave plate of a recording medium, when a reading or reproducing light is applied, the detected polarization angle will be greater than the polarization angle of the recording light, so that a stable signal-to-noise ratio can be achieved. *See, e.g.*, instant specification at P4/L15-18. The only motivation for combining the asserted references to achieve such an unexpected result comes from the present disclosure, and reliance on such motivation constitutes impermissible hindsight. Accordingly, a *prima facie* case of obviousness has not been made.

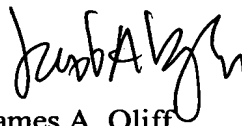
For at least these reasons, the combination of Leube, Savant and Michl does not render obvious the subject matter of claims 1-20, 22-29, 35-38, 40-57, 59 and 60. Accordingly, reconsideration and withdrawal of the rejection of claims 1-20, 22-29, 35-38, 40-57, 59 and 60 are respectfully requested.

Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20, 22-38, 40-57, 59 and 60 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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